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PROJECT NO. 51603

REVIEW OF DISTRIBUTED	§	PUBLIC UTILITY
	§	
ENERGY RESOURCES	§	COMMISSION OF TEXAS

COMMENTS OF THE ADVANCED ENERGY MANAGEMENT ALLIANCE

The following comments are submitted by the Advanced Energy Management Alliance (“AEMA”) ¹ in response to the questions raised by the Public Utility Commission of Texas (“Commission”) in a memorandum dated April 29, 2022 in this Project. AEMA appreciates the Commission’s action in opening this project and this opportunity to file comments. These comments represent the views of the organization as a whole rather than those of any individual member.

- 1. What planning and control processes and practices should the Commission consider for greater DER participation and grid resilience? Which entities should be involved in planning and control processes and practices?**
 - a. What are the different utilization and participation formats for existing DERs on distribution networks?**

The Electric Reliability Council of Texas (“ERCOT”) has adopted rules that have permitted large distribution-level resources to participate in the energy market and has recently broadened the opportunities for resources on the distribution system to participate in its energy markets.² In addition, FERC-jurisdictional Independent System Operators (“ISOs”) already utilize distributed energy resources (“DERs”) to provide ancillary services such as regulation services,

¹ The Advanced Energy Management Alliance is a trade association that includes national Distributed Energy Resource (DER) aggregators, advanced energy management service, and technology providers. We advocate for policies that appropriately compensate customers who provide energy-related services and that help build a more efficient, cost-effective, resilient, reliable, and environmentally sustainable grid.

² For example, ERCOT has categories of Distribution Resources and has recently created Settlement-Only resources, which are distribution-level resources that can participate in the energy market. The Settlement-Only protocol changes have been adopted, but not yet implemented. ERCOT Nodal Protocols, Section 2.

operating reserves, and emergency response services. DERs can also provide the same benefits as traditional generating resources in capacity and energy markets and in meeting reliability needs. The California ISO (“CAISO”) established the first DER model created by a regional transmission organization (“RTO”) in 2016, allowing heterogeneous aggregations of resources to participate in the Day Ahead Market. The New York ISO (“NYISO”) followed suit in 2020, and the other four FERC-jurisdictional ISOs are in the process of designing participation models for DERs, in compliance with FERC Order 2222. These models are designed to remove barriers that impede DERs from providing their full range of reliability and cost benefits.³

b. Should the current size limit on unregistered distributed resources be reconsidered?

- 2. Transmission and distribution modification: What equipment, processes, and standards need to be implemented to allow for further DER participation?**
- 3. Cost quantification: How much transmission and distribution investment will be necessary and what methods would be available to recuperate costs? And should the Commission consider new methods of cost allocation and recovery for DER-related infrastructure enhancements?**

Growing DER penetration may necessitate upgrades to the transmission and distribution infrastructure, but more energy resources closer to loads can also reduce or delay the need for additional transmission and distribution facilities. There will also be cost savings associated with DERs.⁴ Texas’ power demand is projected to increase in the coming years,⁵ and DERs can help

³ Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators, Order No. 2222, 172 FERC S 61,247, at P 114 (2020). For more information on the use cases of DERs, see the Advanced Energy Economy’s white paper of the subject at <https://info.aee.net/ferc-order-no.-2222-and-the-use-cases-it-can-unlock#:~:text=FERC%20Order%20No.-,2222%20and%20the%20Use%20Cases%20It%20Can%20Unlock,Regulatory%20Commission%20issued%20Order%20No.>

⁴ The Texas Advanced Energy Business Alliance issued a report that estimated a total of \$5.47B in savings from DERs over 10 years (\$3.02B in wholesale market costs and \$2.45B in deferred or avoided utility investment). Report is available at texasadvancedenergy.org.

⁵ See ERCOT’s latest Seasonal Assessment of Resource Adequacy at https://www.ercot.com/files/docs/2021/11/19/SARA_Winter2021-22.pdf

meet demand and provide unique locational benefits. Resources located closer to loads will require less transmission investment than traditional central-station generation and likely less interconnection cost overall, especially if DER developers receive appropriate location signals. In addition, distribution utilities (“DUs”) can use targeted DER resources to reduce or delay the need for additional distribution facilities. The Commission should encourage DUs to incorporate existing DERs into their planning process and to adopt programs to use targeted DERs to avoid distribution costs, where it is economically feasible.

a. What market signals, if any, should be considered related to DERs aimed at providing grid services?

Market signals should encourage DERs to provide as many reliability and cost benefits as possible, and market rules should allow DERs to participate in whatever markets they are technically capable of. DERs as a class are capable of providing all grid services, including capacity, energy, reserves, regulation and frequency support. Even black start services could, in principle, be provided by aggregated DERs capable of injections.

In areas that require more energy supply, DERs should be incentivized to locate there in the place of large-scale generation facilities that will require expensive transmission upgrades. During grid emergencies, industrial facilities that can inject energy into the system or curtail their consumption should be compensated fairly for their contributions; otherwise, they are incentivized to prioritize their facility’s needs over those of the larger grid. In addition, as noted above, DUs should be encouraged to adopt programs to use targeted DERs to avoid distribution costs.⁶ In all of these examples, DERs need to be incentivized to do what they do best.

4. Data accessibility: What data would improve supply side dynamics and encourage targeted development? What information would be useful to establish a current

⁶ The Texas Legislature has explicitly authorized such arrangements with companies providing storage, in the 2021 adoption of SB 415.

baseline and assess future market potential? What accessibility and information security concerns should be considered?

Retail customers and DER aggregators would benefit from knowing where a DU's existing infrastructure can readily accommodate more DERs and where a DU is seeking DER resources to delay or avoid the need for new distribution facilities. Each utility should be required to conduct a yearly system analysis that would show the areas of the grid where investment in DER would be more economically beneficial for customers and the system. Spurred by regulators, New York's utilities have gone to great efforts to make "hosting maps" available to facilitate DER location decisions.⁷ The planning process should also be modified so that the distribution system could be designed to incorporate existing DERs and so that DERs are better positioned to meet local reliability needs.

a. What level of information should entities responsible for planning and control of DERs have access to for long-term planning purposes?

ERCOT, and any other entity that is responsible for planning and controlling DERs, should have access to information about the resource's characteristics at the aggregation level. This could include the aggregation's total capacity, minimum and maximum operating limits, ramp rate, and minimum and maximum run time. Small, individual resources do not interface with ERCOT, are normally not modeled separately, and do not need to provide as much information as the aggregation does. DUs acquire information about individual DERs during the interconnection process, and they may require additional information, if they adopt programs to deploy DERs to reduce distribution costs.⁸ In both arenas, the Commission should avoid imposing unnecessary information requirements on individual resources and aggregators.

⁷ See <https://www3.dps.ny.gov/W/PSCWeb.nsf/All/6143542BD0775DEC85257FF10056479C>.

⁸ The investor-owned DUs operate load-management programs under the Commission's energy efficiency program. The resources in this program are effectively DERs that can be deployed by the DU or at the direction of ERCOT. A

5. Other Questions:

- a. Should the Commission consider classifying various DER types? If so, on what basis should DERs be classified? For example, size, performance, characteristics, or some other attribute? (E.g., rooftop solar PV, distribution connected energy storage, microgrids)**

The Commission should consider classifying DERs by size, performance, or other technologically neutral aspects when doing so can improve reliability and participation. Load reductions from smart thermostats, for example, can be quantified using run time data while injections from EVs cannot. The registration, metering, and settlement rules for each type of resources may need to be different, to recognize their different operating characteristics, but the rules should accommodate each type of resource and encourage their participation in programs to improve grid reliability.

At the same time, the Commission should be conscious of how DER technology is incredibly diverse and evolving rapidly. A classification system developed today may become restrictive and unnecessarily burdensome in the future. The Commission should provide resources with as much flexibility as possible to guard against this possibility. It should also consider the potential for rapid evolution in this area in deciding how detailed its rules should be. The diversity and rapid evolution that is expected would support the Commission's adoption of broad principles in its rules, while directing ERCOT and DUs to adopt more detailed protocols and procedures to implement the Commission's directives. This is the approach that the FERC is taking in Order 2222, and it would be appropriate in Texas also.

- b. What issues should be considered for segmentation and islanding? Should there be consideration related to DERs associated with critical facilities and entities?**

broader DU program to delay or avoid the need for new distribution facilities could incorporate load, generation, and storage resources.

Many critical facilities, such as military bases and hospitals, have adopted DERs to help ensure that they can continue operations during power outages. These facilities normally exist on a priority circuit and are not vulnerable to rolling blackouts. While the Commission should keep the needs of these facilities in mind, their DERs are normally able to function as they would anywhere else. Their DERs should be able to participate in the market provided it does not compromise their critical infrastructure services. It appears that many customers who would not be classified as critical are installing generation or storage to provide an additional measure of energy security in the event of a major grid event. To the extent that these customers do not have the ability to island their facility or operate as a microgrid if their grid supply is cut off, the Commission should consider what changes in existing rules and interconnection arrangements would be needed to permit them to do so.

c. What should be done to encourage consistency in interconnection agreements between the various interconnecting entities?

The Commission has adopted a uniform distribution tariff and a standard agreement for the interconnection of a distributed generation facility,⁹ but it is not clear that the tariff and agreement adequately address the interconnection of generation or storage facilities at a customer's site. The Commission should investigate the existing terms of the standard interconnection agreement and evaluate whether modifications to the agreement would be appropriate.

d. What can the Commission do to promote consistency in its DER policy between the ERCOT and non-ERCOT markets?

The Commission should adopt the standard definition of a DER which is "any resource located on the distribution system, any subsystem thereof or behind a customer meter." This

⁹ 16 Texas Admin. Code 25.214, 25.211.

definition was adopted by FERC in Order 2222¹⁰ and is used by all other ISOs. Its technological neutrality provides market participants with the flexibility that will be needed in the future as the industry evolves.

The Commission should also establish a 100-kilowatt minimum for DER aggregations. ERCOT has a 100-kW minimum for ancillary services and Emergency Response Service. Prior to Order 2222, PJM and SPP both had 100 kW as their minimum size and every RTO/ISO had a model that allowed aggregations that small to participate. Order 2222 removed the remaining barriers to small aggregations and standardized 100 kW as the minimum aggregation size across the FERC-jurisdictional ISOs.¹¹ The Commission should, however, recognize that as technology evolves, a smaller minimum might be appropriate in the future.

A registration process for all new DERs, which is necessary, should be streamlined, simplified, and not overly burdensome. The Commission should ensure that this process proceeds smoothly and does not limit DER market participation, by limiting the review period to 10 days. While FERC has adopted a longer time limit in Order 2222,¹² CAISO has adopted a 10-day registration process; requiring a shorter process would address a significant barrier to DER market entry.¹³

Participation in both retail programs and the wholesale market should also be allowed and encouraged. Different programs serve different purposes. A resource that receives capacity payments for emergency services should not be banned from selling into the wholesale market at non-emergency times. NYISO and other ISOs have recognized this and allowed dual participation

¹⁰ See Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators, Order No. 2222, 172 FERC S 61,247, at P 114 (2020).

¹¹ *Ibid.*, at p. 8.

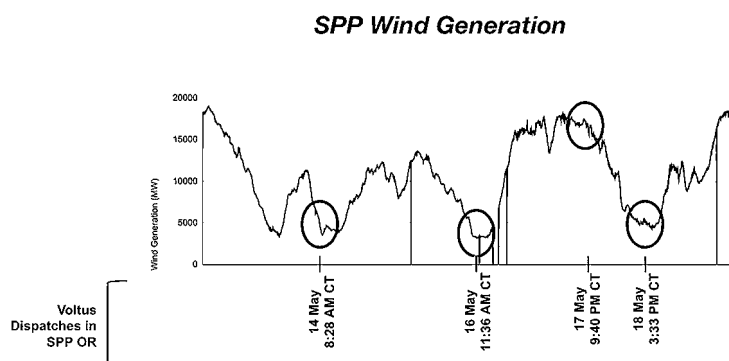
¹² *Ibid.*, at p. 295.

¹³ California ISO “Demand Response Registration User Guide Version 4.9”, at p. 43, available at <http://www.caiso.com/Documents/DemandResponseRegistrationUserGuide-clean.pdf>.

for years.¹⁴ Developing a participation model specific to DERs would also bring Texas into line with the other two single state RTOs, CAISO and NYISO. While Texas does allow individual resource types (*e.g.*, load resources) to participate in ERS and other ancillary services, it does not have a dedicated DER model yet. These resources are not able to provide as many services to the grid as they would otherwise.

e. What successes have been seen in other states that could be implemented in Texas?

ISOs that have a high penetration of intermittent resources have managed to use load reduction, storage, and DERs to help balance them. As the graph on the left shows, the Southwest



Power Pool (“SPP”) has begun dispatching the distributed resources in their operating reserves whenever wind production begins to lag. Texas, which is home to a quarter of the

nation’s wind production,¹⁵ could benefit from the same services.

f. What can reasonably and economically be done within a 5-year timeframe?

Except for the Midcontinent Independent System Operator (“MISO”), every ISO has indicated that they can implement their plans for compliance with Order 2222 in the next five years. ERCOT has made progress in incorporating DERs into its market, and ERCOT and the Texas PUCT are also in the enviable position of being a single state RTO with the same regulatory

¹⁴ See Rao Konidena’s article “Three reasons why dual participation market model at NYISO is best for energy storage” in Renewable Energy World from March 26, 2020 at <https://www.renewableenergyworld.com/storage/three-reasons-why-dual-participation-market-model-at-nyiso-is-best-for-energy-storage/#gref>.

¹⁵ Energy Information Administration profile of Texas’ resource mix, at <https://www.eia.gov/state/?sid=TX#tabs-3>.

body overseeing both the wholesale and retail market. They will not have to manage as much regulatory complexity as the multi-state RTOs. Developing a participation model for DERs and harnessing the benefits that will come with their natural growth is easily doable within five years.

g. What other issues, if any, should the Commission consider and address while developing rules related to DERs?

The Commission should take care to avoid imposing arbitrary and unnecessary barriers on DER participation in ERCOT markets. For example, DER aggregations should not be restricted to a single pricing node. Some ISOs have shown that aggregations can be operated without it, and that it is unnecessarily restrictive. DERs should also not be subjected to cost-prohibitive telemetry and metering requirements, where there is a reasonable alternative. Many DERs have internal metering that is suitable for settlement purposes. That metering should be used, instead of more expensive solutions. Those are just two of the many pitfalls that the Commission should avoid.

The Commission should also address the barriers to entry for DERs that do not partner with a Load-Serving Entity (“LSE”). Under ERCOT rules, a DER that participates in Security-Constrained Economic Dispatch must be represented by the same Qualified Scheduling Entity that represents the LSE that provides retail service to the customers involved in the DER resource. ERCOT rules also provide that a cooperative or a municipal DU can deny a DER entity the ability to work with customers in participating in ERCOT programs if the customer is located in the DU’s service area. In addition, the existing market rules compensate the LSE for energy provided by a DER resource deployed in an ERCOT market, rather than the customer’s DER aggregator/partner. These barriers should be addressed.

The Commission should also recognize that it has an exciting opportunity here. There are

22 million registered vehicles in Texas.¹⁶ If 100,000 of them were replaced with the new Ford electric truck, and they each injected the full 131 kWh that they can, they could provide 13,100 MWh of grid support in aggregate.¹⁷ That could power every home in Austin for a day.¹⁸ Electric vehicles are coming to market, and the Commission should seek to utilize those new resources. DERs can provide many of the reliability benefits of traditional thermal generators, but more cost-effectively. They are expected to continue to increase their deployment in the coming years, and, if the Commission accommodates them now, they will help Texas' grid immensely.

Conclusion

Distribution-level resources are expanding in Texas because they provide important benefits to customers. They also provide benefits to the grid, and those benefits can be increased if barriers are removed to their participation in ERCOT markets and reliability programs. Where DERs provide benefits to the market, they should be fairly compensated for it. AEMA encourages the Commission to adopt an approach to DERs that is similar to the FERC's, encouraging ERCOT and utilities to remove barriers and adopt fair compensation approaches. AEMA appreciates the Commission's action in opening this project, and the opportunity to file these comments.

Respectfully submitted,



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¹⁶ See the "About Us" section of the Texas' Department of Motor Vehicles' website at <https://www.txdmv.gov/aboutus#:~:text=Vehicle%20Titles%20and%20Registration%20Division&text=Currently%2C%20there%20are%20more%20than%2022%20million%20registered%20vehicles%20in%20Texas>.

¹⁷ For the capability of the Ford F-150, see Kelly Pickerel's article in Solar Power World, at <https://www.solarpowerworldonline.com/2022/02/ford-f-150-lightning-truck-can-use-131-kwh-battery-as-home-backup-power/>.

¹⁸ Assuming that the 395,280 households in Austin use the national average of 30 kWh/day.

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ADVANCED ENERGY MANAGEMENT ALLIANCE

EXECUTIVE SUMMARY

- DERs can provide the same benefits as traditional generating resources in capacity and energy markets and in meeting reliability needs, as has been demonstrated in ISOs outside of Texas.
- More energy resources closer to loads can reduce or delay the need for additional transmission and distribution facilities. The Commission should encourage DUs to incorporate existing DERs into their planning process and to adopt programs to use targeted DERs to avoid distribution costs, where it is economically feasible.
- Each distribution utility should be required to conduct a yearly system analysis that would show the areas of the grid where investment in DER would be more economically beneficial for customers and the system.
- ERCOT should have access to information about the resource's characteristics at the aggregation level. The Commission should avoid imposing unnecessary information requirements on individual resources and aggregators.
- The registration, metering, and settlement rules for each type of resources may need to be different to recognize their different operating characteristics and encourage their participation in programs to improve grid reliability. DER technology is incredibly diverse and evolving rapidly, so the Commission should provide resources with as much flexibility as possible to guard against the rules becoming unnecessarily restrictive and burdensome.
- The Commission should address the barriers to entry for DERs that do not partner with an LSE.
- The Commission should take care to avoid imposing arbitrary and unnecessary barriers on DER participation in ERCOT markets, such as restricting DER aggregations to a single pricing node or adopting cost-prohibitive telemetry and metering requirements.